

## Claims

1. A method for producing multifaceted graphitic nanotubes, which process comprises:
  - i) reacting a mixture of  $\text{CH}_4$  and  $\text{O}_2$  in the presence of a catalyst system comprised of a mixture of at least one Group VIII metal oxide and at least one Group II metal oxide at effective temperatures to produce a mixture of  $\text{CO}$  and  $\text{H}_2$ ; and
  - ii) reacting at least a portion of the mixture of  $\text{CO}$  and  $\text{H}_2$  in the presence of a catalyst system comprised of a mixture of a Group VIII metal component and Group II metal oxide at effective temperatures to grow multifaceted graphitic nanotubes therefrom.
2. The method of claim 1 wherein the Group VIII metal is selected from Fe, Ni, and Co.
3. The method of claim 2 wherein the Group VIII metal is Co.
4. The method of claim 1 wherein the mixture of  $\text{CH}_4$  and  $\text{O}_2$  is reacted at a temperature from about  $350^\circ\text{C}$  to about  $1000^\circ\text{C}$ .
5. The method of claim 4 wherein the mixture of  $\text{CH}_4$  and  $\text{O}_2$  is reacted at a temperature from about  $450^\circ\text{C}$  to about  $1000^\circ\text{C}$ .
6. The method of claim 1 wherein the temperature at which the graphitic nanotubes are grown is from about  $550^\circ\text{C}$  to about  $700^\circ\text{C}$ .
7. The method of claim 6 wherein the temperature at which the graphitic nanotubes are grown is from about  $600^\circ\text{C}$  to about  $700^\circ\text{C}$ .
8. A method for producing multifaceted graphitic nanotubes, which process comprises:

reacting at least a portion of mixture of  $\text{CO}$  and  $\text{H}_2$  in the presence of a catalyst system comprised of a mixture of a Group VIII metal and  $\text{MgO}$  at effective temperatures to grow multifaceted graphitic nanofibers therefrom.
- 9 The method of claim 8 wherein the Group VIII metal is selected from Fe, Ni, and Co.

10 The method of claim 9 wherein the Group VIII metal is Co.

11 The method of claim 8 wherein the mixture of  $\text{CH}_4$  and  $\text{O}_2$  is reacted at a temperature from about  $350^\circ\text{C}$  to about  $1000^\circ\text{C}$ .

12 The method of claim 11 wherein the mixture of  $\text{CH}_4$  and  $\text{O}_2$  is reacted at a temperature from about  $450^\circ\text{C}$  to about  $1000^\circ\text{C}$ .

13. The method of claim 8 wherein the temperature at which the graphitic nanotubes are grown is from about  $550^\circ\text{C}$  to about  $670^\circ\text{C}$ .

14. The method of claim 13 wherein the temperature at which the graphitic nanotubes are grown is from about  $600^\circ\text{C}$  to about  $650^\circ\text{C}$ .